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			2631	<u> </u>	
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Please find below and/or attached an Office communication concerning this application or proceeding.

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•		Application No.	-	Applicant(s)	$\overline{}$			
. 1		09/553,735		SHENOI, KISHAN				
	Office Action Summary	Examiner		Art Unit				
	•	Emmanuel Baya	rd	2631				
	The MAILING DATE of this communication app				ess			
Period fo	or Reply			•				
THE I - Exter after - If the - If NO - Failu - Any r	ORTENED STATUTORY PERIOD FOR REPLY MAILING DATE OF THIS COMMUNICATION. Issions of time may be available under the provisions of 37 CFR 1.13 SIX (6) MONTHS from the mailing date of this communication. Period for reply specified above is less than thirty (30) days, a reply period for reply is specified above, the maximum statutory period were to reply within the set or extended period for reply will, by statute, epply received by the Office later than three months after the mailing dipatent term adjustment. See 37 CFR 1.704(b).	36(a). In no event, howen within the statutory minuil apply and will expire a cause the application to	ver, may a reply be time imum of thirty (30) days SIX (6) MONTHS from to become ABANDONED	ely filed will be considered timely. the mailing date of this comm (35 U.S.C. § 133).	nunication.			
1)⊠	Responsive to communication(s) filed on 20 A	April 2000 .						
2a)□		is action is non-fi	nal.					
3)	, -							
Dispositi	on of Claims							
4)⊠	Claim(s) <u>1-43</u> is/are pending in the application							
	4a) Of the above claim(s) is/are withdrawn from consideration.							
5)	Claim(s) is/are allowed.							
	Claim(s) <u>1-43</u> is/are rejected.							
	Claim(s) is/are objected to.							
	Claim(s) are subject to restriction and/or on Papers	r election require	ment.		•			
9) 🗌 🤈	The specification is objected to by the Examine	r.						
10) 🔲 🖰	Fhe drawing(s) filed on is/are: a)□ accep	oted or b) object	ed to by the Exam	niner.				
	Applicant may not request that any objection to the	e drawing(s) be hel	d in abeyance. Se	e 37 CFR 1.85(a).				
11) ☐ The proposed drawing correction filed on is: a) ☐ approved b) ☐ disapproved by the Examiner.								
	If approved, corrected drawings are required in rep	•	ion.					
12) 🔲 -	The oath or declaration is objected to by the Ex	aminer.						
Priority u	nder 35 U.S.C. §§ 119 and 120							
13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).								
a)[☐ All b)☐ Some * c)☐ None of:							
	1. Certified copies of the priority documents have been received.							
	2. Certified copies of the priority documents have been received in Application No							
* S	3. Copies of the certified copies of the prior application from the International Buree the attached detailed Office action for a list	reau (PCT Rule 1	7.2(a)).		age			
14) 🗌 A	cknowledgment is made of a claim for domestic	c priority under 3	5 U.S.C. § 119(e)	(to a provisional ap	plication).			
	The translation of the foreign language pro							
Attachment	(s)				•			
2) X Notice	e of References Cited (PTO-892) e of Draftsperson's Patent Drawing Review (PTO-948) nation Disclosure Statement(s) (PTO-1449) Paper No(s)	4) 5) 6)		(PTO-413) Paper No(s). atent Application (PTO-1				
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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- 2. Claim 42 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
- 3. Claim 42 recites the limitation "the correlater circuit" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

- 4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 5. Claims 1-13, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al U.S. Patent No 6,067,292 in view of Kaku U.S. Patent No 6,104,748.

As per claim 1, Huang et al discloses a method for tracking CDMA pilot channel signal to discipline an oscillator comprising: down converting (see fig.2 elements 202 and 203 and col.4,

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lines 16-20) an RF signal from a center frequency Fr to an intermediate center frequency Fl where fl is greater than or equal to a CDMA chip rate Fc wherein down converting includes incorporated bandpass filtering (see fig.2 elements 204, 205 and col.4, lines 20-22) to remove extraneous signals while passing said CDMA pilot channel signal (see abstract and col.2, lines 1-4); converting a signal format from analog to digital using a single analog to digital converter (see fig.3 elements 301, 302 and col.4, lines 55-57) employing a sampling rate of Fs to create a signal sampling signal Sn; employing correlation circuit (see figs.4, 5 elements 402-404, 520 and col.5, lines 20-35 and col.6, lines 30-67) to establish a correlation between the Sn locally generated versions of I-channel and Q channel PN signals respectively; generating an estimating of an error (see col.17, lines 16-25).

However Huang et al does not teach generating an estimating of a frequency error of the oscillator using correlation values corresponding to (2M + 1) time shifts where a time shift of K corresponds to a time shift that provides the maximum correlation value and M is greater or equal to 1.

Kaku teaches generating an estimating of a frequency error of the oscillator using correlation values corresponding to (2M + 1) time shifts where a time shift of K corresponds to a time shift that provides the maximum correlation value and M is greater or equal to 1 (see figs. 3, 6-11 element 4 and col.7, lines 55-58 and col.6, lines 39-42 and col.9, lines 28-67 and col.10, lines 1-15).

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It would have been obvious to one of ordinary skill in the art to implement the teaching of Kaku into Huang as to performed frequency synchronization for the clock signal used in the receiving apparatus such that the despreading correlation result of the received signal using PN code sequence in the receiving apparatus always has a maximum as taught by Kaku (see col.10, lines 8-15).

As per claims 2-4, the method of Huang does includes a sampling rate, Fs, an intermediate center frequency, fl, and a chip rate, fc. Furthermore implementing the Fs, fl, and fc to be related by Fs=4fc and Fl=fc+ kFs would have been obvious to one skill in the art in order to accurately remove noise in the pilot channel signal.

As per claim 5, the method of Huang does includes a single accumulator for generating both real and imaginary (see fig.5 element 504 and col.6, line 52).

As per claim 6, it would have been to one skill in the art to implement the monitoring of both positive overflows and negative overflows into Huang in order to enhance the correlation capability of the channel.

As per claim 7, the method of Huang does include correlation process instead of matched filter (see fig.4 element 402).

As per claim 8, the method of Huang does include a receiver (see fig.2).

As per claims 9-10 and 13, it would have been to one skill in the art to implement the correlation computation of time shift lags into Huang in order to achieve better correlation in the channel.

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As per claims 11-12, the method of Huang does include background correlation (see fig.4 element 403).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 14-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Huang et al U.S. Patent 6,067,292.

As per claim 14, Huang et al discloses an apparatus to track a pilot signal, comprising: a correlator circuit adapted to compute a complex correlation between a received version of the pilot signal and locally generated versions of I-channel and Q-channel PN signals, respectively

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(see figs.4, 5 elements 402, 520 and col.2, lines 5-10 and col.5, lines 10-67 and col.6, lines 30-67).

As per claim 15, the apparatus of Huang does includes a buffer. Note that a FPGA is known in the art as buffering device or a storage device. Therefore the buffer of Huang is considered as a FPGA.

As per claim 16, the method of Huang does includes a single accumulator for generating both real and imaginary (see fig.5 element 504 and col.6, line 52).

As per claims 17-18, the method of Huang does includes a signal processor having a DSP (see fig.2 element 209 and col.4, line 25).

As per claim 19, the method of Huang does includes a signal processor for averaging correlations values (see col.4, lines 26-28).

As per claim 20, the method of Huang does includes parallel correlator (see fig.4 element 402-404).

As per claim 21, the method of Huang does includes a background correlation (see fig.4 element 404).

As per claim 22, the method of Huang does includes a CDMA pilot (see abstract and col.4, line 28).

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Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

9. Claims 24-25, 27-28, 32-43 are rejected under 35 U.S.C. 102(e) as being anticipated by Feher U.S. Patent No 6,479,055 B1.

As per claims 24 and 34, Feher et al discloses a method for tracking a pilot channel comprising: disciplining an oscillator (see figs.6b, 33 elements 6.22, 33.6 and col.20, lines 6-18) including generating a spectrum shaped channel pilot signal (see col.1, line 16 and col.13, line 61)Y(n) from a chip-rate PN sequence by: over sampling (see figs.6b, 33 elements 6.23, 6.25 33.7 and col.20, line 7 and col.37, line 7). Note that element 6.23 is known in the art as to perform over sampling of RF signal or finding a degree of similarity the correlation between two

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incoming signals therefore element 6.23 is considered as the claimed over sampling or correlating) the chip rate PN sequence at a higher sampling rate to yield a signal A(n); passing A(n) through a first FIR filter (see figs. 6b, 33 elements 6.26 or 6.27 or 33.8 and col.19, lines 20-24 and col.20, lines 11-17) whose impulse response coefficients are G(n) to yield a signal B(n); filtering B(n) with a second filter (see figs.6b, 33 elements 6.30 or 6.31 or 33.9 and col.19, lines 20-24 and col.20, lines 11-17) to yield the spectrum shaped channel pilot Y(n).

As per claim 25, the method of Feher does include an I channel pilot (see fig.33 element).

As per claim 27, the method of Feher does include I channel down to zero (see col.24, lines 55-56).

As per claim 28, the method of Feher does include baseband signal (see abstract).

As per claim 32, the method of Feher does include a receiver (see fig. 6b).

As per claim 33, the method of Feher does include an I channel pilot (see fig.33 element).

As per claim 35, the method of Feher does include a FPGA (see col.16, line 55).

As per claims 36-37, the method of Feher does include a signal processor having a DSP (see col.16, line 55).

As per claim 38, the method of Feher does include an A/D converter (see fig.30 element 30.10).

As per claim 39, the method of Feher does include a 4-point FIR filter (see fig. 13C and col.19, lines 21-22 and col.27, lines 30-31).

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As per claim 40, the method of Feher does include a 4-point FIR filter therefore a 48 point FIR filter is inherently included in Feher.

As per claim 41, the method of Feher does include a CDMA channel (see col. 1, line 15).

As per claim 42, the method of Feher does include a background correlator (see element 6.23). Note that element 6.23 is known in the art as to perform over sampling of RF signal or finding a degree of similarity the correlation between two incoming signals therefore element 6.23 is considered as the claimed correlator).

As per claim 43, the method of Feher does include a receiver (see fig.6b).

Claim Rejections - 35 USC § 103

- 10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 11. Claims 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feher U.S. Patent No 6,470,055 B1 in view of Kaku U.S. Patent No 6,104,748.

As per claim 29, Feher discloses all the features of the claimed invention except a sampling clock is derived from a VXCO that is a phase locked to a reference frequency.

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Kaku teaches a sampling clock is derived from a VXCO that is a phase locked to a reference frequency (see figs.3, 12 element 9 and col.3, lines 35-40 and col.5, lines 10-17 and col.6, lines 14-67).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Kaku into Feher so that a spreading code generator tracks the spreading code sequence of the received multiplied in the transmitting apparatus such that synchronization with the spreading code sequence is established as taught by Kaku (see col.2, lines 53-56).

As per claim 30, it would have been to one skill in the art to implement a correlation computation lags into Feher in order to achieve better correlation in the channel.

As per claim 31, it would have been obvious to one of ordinary skill in the art to implement the a correlation process instead of a matched filter into Feher so that better synchronization could be achieved.

12. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Feher U.S. Patent No 6,470,055 B1 in view of Zhodzishsky et al U.S. Patent No 6,493,378 B1.

As per claim 26, Feher discloses all the features of the claimed invention except monitoring of both positive overflows and negative overflows.

Zhodzishsky et al teaches monitoring of both positive overflows and negative overflows (see col.14, lines 30-41).

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It would have been obvious to one of ordinary skill in the art to implement the monitoring of both positive overflows and negative overflows of Zhodzishsky et al into Feher as measure the different offset values as taught by Zhodzishsky et al (see col.14, lines 30-41).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Krasner U.S. Patent No 6,289,041 teaches a Fast acquisition.

Woo U.S. Patent No 5,808,582 teaches a Global positioning system.

Harrison et al U.S. Patent No 6,151,353 teaches a pre-acquisition frequency offset.

Molnar U.S. Patent No 6,298,227 B1 teaches a method and apparatus for frequency conversion.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is (703) 308-9573. The examiner can normally be reached on Monday-Thursday from 8:00 AM - 5:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham, can be reached on (703) 305-4378. The fax phone number for this Group is (703) 872-9314.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3800.

Emmanuel Bayard

Patent Examiner

May 16, 2003